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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,076	10/12/2005	Naomi Yonemura	278097US2PCT	2726
22850	7590	03/05/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER LL MEIYA	
			ART UNIT 2811	PAPER NUMBER
			NOTIFICATION DATE 03/05/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/553,076

Applicant(s)

YONEMURA ET AL.

Examiner

MEIYA LI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 5-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sakamoto et al. (2002/0030268).

Sakamoto et al. show in Fig. 9A and related text a metal based circuit board to be used for a hybrid integrated circuit, comprising:

- a plurality of circuit pads 55B/55C provided on a metal plate 51;
- an insulating layer RF in between the plurality of the circuit pads and the metal plate;
- a power semiconductor 52A mounted on one circuit pad 55C of the plurality of the circuit pads;
- a control semiconductor 55B to control the power semiconductor provided on another circuit pad 55B of the plurality of the circuit pads; and
- a low capacitance portion 54 embedded in the metal plate under the insulating layer and under the another circuit pad of the plurality of the circuit pads on which the control semiconductor is mounted.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Cubero Pitel (2005/0145595).

AAPA shows a metal based circuit board to be used for a hybrid integrated circuit, comprising:

- a plurality of circuit pads 3 provided on a metal plate 7;
- an insulating layer 4 in between the plurality of the circuit pads and the metal plate;
- a power semiconductor 2 mounted on one circuit pad of the plurality of the circuit pads;
- a control semiconductor 1 to control the power semiconductor provided on another circuit pad of the plurality of the circuit pads.

AAPA does not disclose that a low capacitance portion embedded in the metal plate under the insulating layer and under the another circuit pad of the plurality of the circuit pads on which the control semiconductor is mounted.

Cubero Pitel show in Fig. 5 and related text a low capacitance portion 7 embedded in the metal plate 2 under the insulating layer 7.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to include a low capacitance portion embedded in the metal plate

under the insulating layer, as taught by Cubero Pitel, in AAPA's device, in order to provide good insulation resistance and dielectric strength features.

The prior art combined device shows the low capacitance portion under the another circuit pad of the plurality of the circuit pads on which the control semiconductor is mounted.

As for claim 2, AAPA and Cubero Pitel disclosed substantially the entire claimed invention, as applied to claim 1 above, except the low capacitance portion is made of a resin containing an inorganic filler and has a dielectric constant of from 2 to 9.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to use a lower dielectric constant material, as a low capacitance portion, in AAPA and Cubero Pitel's device, in order to reduce the capacitance of the structure and increase the device speed. Furthermore, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

As for claim 3, AAPA and Cubero Pitel disclosed substantially the entire claimed invention, as applied to claim 1 above, except the thickness of the low capacitance portion is from 100 to 1,000 μm .

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to include low capacitance portion is from 100 to 1,000 μm thick, in order to optimize the performance of the device. Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering

the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

It has been held in that the applicant must show that a particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). Note that the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some dimensional limitation or other variable within the claims, patentability cannot be found. The instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) and Cubero Pitel (2005/0145595), as applied to claim 1, in view of Ellis et al. (6,233,817).

AAPA and Cubero Pitel disclosed substantially the entire claimed invention, as applied to claim 1 above, except another insulating layer between the insulating layer and the metal plate, wherein the low capacitance portion is embedded in the metal plate and in the another insulating layer, and the low capacitance portion is below the insulating layer.

Ellis et al. teach in Fig. 2 and related text another insulating layer 120 between the insulating layer 122 and the metal plate 112.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include another insulating layer, as taught by Ellis et al., in AAPA and Cubero Pitel's device, in order to reduce the capacitance of the structure and increase the device speed.

The prior art combined device shows the low capacitance portion is embedded in the metal plate and in the another insulating layer, and the low capacitance portion is below the insulating layer.

Response to Arguments

6. Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEIYA LI whose telephone number is (571)270-1572. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on (571) 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. L./

Examiner, Art Unit 2811

2/24/2009

/Ori Nadav/

Primary Examiner, Art Unit 2811